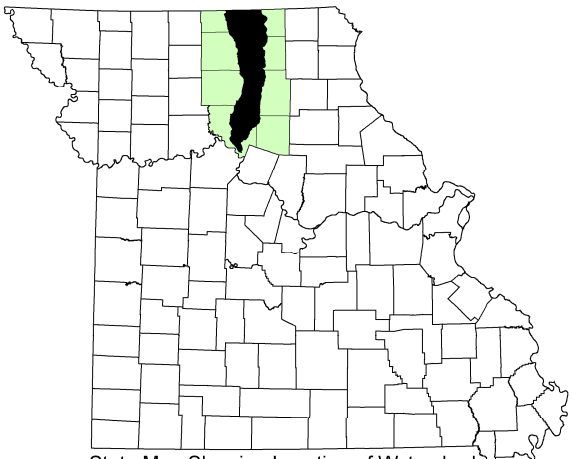
Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Chariton River

Water Body Segment at a Glance:

County: Putnam and Chariton
Nearby Cities: Kirksville
Length of impaired segment: 110 miles
Length of impairment within segment: 40.0 mile
Pollutant: Bacteria
Source: Rural Nonpoint Source
Water Body ID: 0640


State Map Showing Location of Watershed

Scheduled for TMDL development: 2010

Description of the Problem

Beneficial uses of Chariton River

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)
- Irrigation
- Whole Body Contact Recreation - Category A
- Secondary Contact Recreation

Use that is impaired

- Whole Body Contact Recreation - Category A

Standards that apply

- Missouri's Water Quality Standards at 10 CSR 20-7.031(4)(C) state that the *E. coli* bacteria count shall not exceed 126 colonies per 100 milliliters of water (126 col/100 mL) for Category A and 206 col/100 mL for Category B waters. This count is the geometric mean during the recreational season (April 1- October 31) in waters designated for whole body contact recreation.

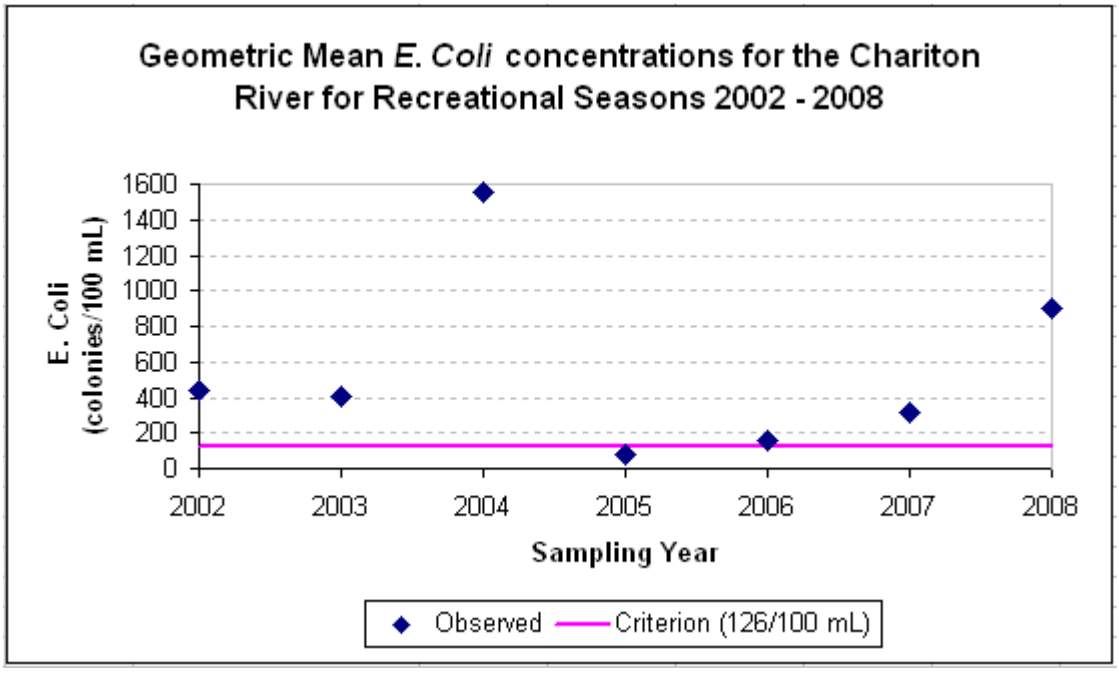
Background information and Water Quality Data

The Chariton River is a long water body originating in Iowa and flowing south to the Missouri River. It is designated as Category A for the whole body contact recreation use, which means it has swimming areas which are open to and fully accessible by the public. Upper portion of river was

evaluated using data from the Iowa Department of Natural Resources, collected from 2002-2008 just a few miles north of the Missouri state line. The proximity of this site to Missouri was judged to make it representative of bacteria conditions in the upper part of the Chariton River in Missouri. This data showed that the water quality criterion of 126 col/100 mL was exceeded in 2003, 2004 and 2006 in Iowa.

Excessive amounts of fecal bacteria in surface water used for recreation are an indication of an increased risk of pathogen-induced illness to humans. Infections due to pathogen-contaminated waters include gastrointestinal, respiratory, eye, ear, nose, throat and skin diseases. Like fecal coliform, *Escherichia coli*, or *E. coli*, are bacteria found in the intestines of warm blooded animals and used as indicators of the risk of waterborne disease from pathogenic (disease causing) bacteria or viruses. Most *E. coli* strains are harmless, but some can cause serious illness in humans and are occasionally responsible for product recalls. The harmless strains are part of the normal flora of the intestines, and can benefit their hosts by preventing the establishment of pathogenic bacteria within the intestine[1,2]. Missouri's bacteria criteria are based on specific levels of risk of acute gastrointestinal illness. The levels of risk correlating to these criteria are no more than eight illnesses per 1,000 swimmers in fresh water.

U.S. Geological Survey data from 2002-2008 collected at Prairie Hill (in Chariton County, Missouri) was used to evaluate the more downstream portions of the Chariton River (see map next page). All recreation season data (pooled for all years) had a geometric mean that exceeded the standard.

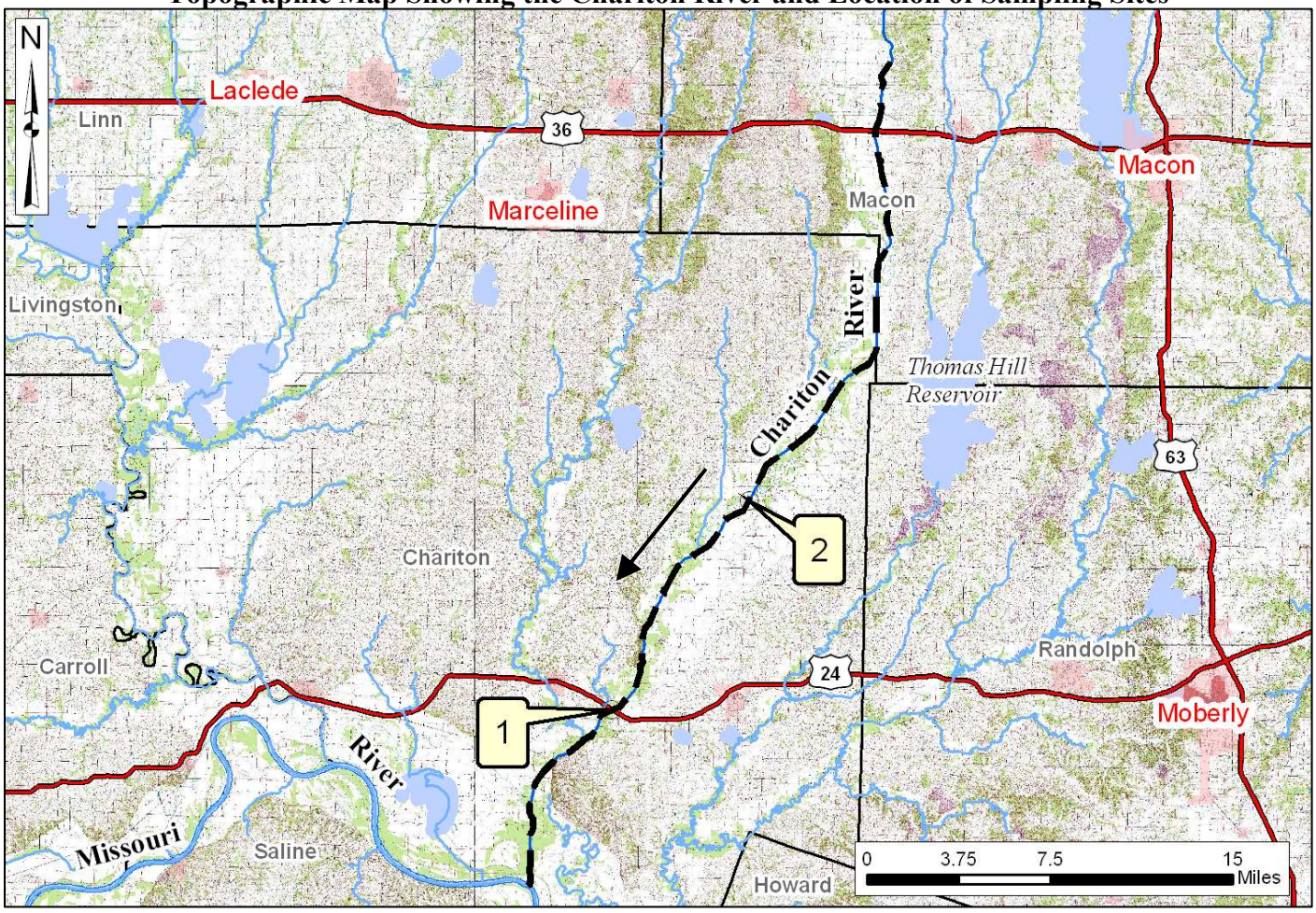


[1] Hudault S, Guignot J, Servin AL (July 2001). "*Escherichia coli* strains colonising the gastrointestinal tract protect germfree mice against *Salmonella typhimurium* infection". *Gut* **49** (1): 47–55

[2] Reid G, Howard J, Gan BS (September 2001). "Can bacterial interference prevent infection?". *Trends Microbiol.* **9** (9): 424–8.

People can protect themselves from waterborne illness by avoiding contact with contaminated water. However, when swimming anywhere, it is wise to take commonsense precautions. These include washing hands before eating, showering after swimming and avoiding exposure to questionable water if you have open cuts or wounds.

Topographic Map Showing the Chariton River and Location of Sampling Sites



Impaired Segment Direction of flow

Sample Sites
1 – Chariton River at U.S. Highway 24
2 – Chariton River near Prairie Hill

For more information call or write:
Missouri Department of Natural Resources, Water Protection Program
P.O. Box 176, Jefferson City, MO 65102-0176
1-800-361-4827 or 573-751-1300 office or 573-522-9920 fax
Program Home Page: www.dnr.mo.gov/env/wpp/index.html